

CLAIMS

1. A heat-shrinkable multi-layer film comprising a heat-shrinkable support film (base film) and, on at least one surface of the base film, at least one layer structure including a layer (a) formed of a poly(carboxylic acid) polymer (A) and a layer (b) formed of a polyvalent metal compound (B), the layers (a) and (b) being in contact with each other, and the multi-layer film exhibiting a percent thermal shrinkage of 3 to 90%.

2. A heat-shrinkable multi-layer film according to claim 1, wherein the heat-shrinkable support film exhibits a percent thermal shrinkage of 3 to 90%.

3. A heat-shrinkable multi-layer film according to claim 1 or 2, which exhibits a percent thermal shrinkage of 5 to 90%.

4. A heat-shrinkable multi-layer film according to any one of claims 1 to 3, wherein the layer (b) formed of the polyvalent metal compound (B) is a polyvalent-metal-compound-containing resin layer formed of the polyvalent metal compound (B) and a resin.

5. A heat-shrinkable multi-layer film according to any one of claims 1 to 4, wherein the ratio of the total thickness of a gas-barrier layer formed of the layers (a) and (b) which are in contact with each other to that of the base film is 0.001 to 0.5.

6. A heat-shrinkable multi-layer film according to any

one of claims 1 to 5, which exhibits an oxygen permeability of $500 \text{ cm}^3/(\text{m}^2 \cdot \text{day} \cdot \text{MPa})$ or less as measured at 30°C and a relative humidity of 80%.

7. A heat-shrinkable multi-layer film according to any
5 one of claims 1 to 6, wherein the polyvalent metal compound (B) is a divalent metal compound.

8. A heat-shrinkable multi-layer film according to any one of claims 1 to 7, wherein the poly(carboxylic acid) polymer (A) is a homopolymer or copolymer formed of at least
10 one polymerizable monomer selected from among acrylic acid, maleic acid, and methacrylic acid, and/or a mixture of such homopolymers or copolymers.

9. A heat-shrinkable multi-layer film according to any one of claims 1 to 8, which contains an additional layer.

15 10. A heat-shrinkable multi-layer film according to claim 9, wherein the additional layer is an adhesive-containing layer.

11. A heat-shrinkable multi-layer film according to any one of claims 1 to 10, which, after thermal shrinkage,
20 exhibits an oxygen permeability equal to or lower than that before thermal shrinkage.

12. A heat-shrinkable multi-layer film comprising a heat-shrinkable support film (base film) and, on at least one surface of the base film, at least one layer structure
25 including a layer (a) formed of a poly(carboxylic acid) polymer (A), and a polyvalent-metal-compound-containing resin layer formed of a polyvalent metal compound (B) and a resin,

the layer (a) and the resin layer being in contact with each other, wherein the multi-layer film exhibits a percent thermal shrinkage of 90% or less, and the base film exhibits a percent thermal shrinkage of 3 to 90%.

5 13. A packaging materials comprising a heat-shrinkable multi-layer film as recited in any one of claims 1 to 12.

14. A packaging materials according to claim 13, which is in the form of a bag, a sheet, a label, a container, or a cover material.

10 15. A packaged material obtained by packaging an object with a heat-shrinkable multi-layer film as recited in any one of claims 1 to 12.

15 16. A packaged product according to claim 15, wherein, when the product is subjected to thermal shrinkage treatment, the heat-shrinkable multi-layer film exhibits an oxygen permeability of $500 \text{ cm}^3/(\text{m}^2 \cdot \text{day} \cdot \text{MPa})$ or less as measured at 30°C and a relative humidity of 80%.

20 17. A heat-shrinkable label comprising a heat-shrinkable multi-layer film as recited in any one of claims 1 to 12.

18. A heat-shrinkable label according to claim 17, to which a heat-sensitive tackifier has been applied.